

CLAIMS

1. A method of determining a home area for a subscriber terminal in a radio system where the subscriber terminal comprises measuring means for measuring the strengths of signals it has received from different base stations and for storing the measurement results in a memory, the method comprising a step of
- 5 receiving a location updating message from the subscriber terminal, **characterized** in that the method comprises steps of
- 10 transmitting, after the location updating message has been received, a command to the subscriber terminal to transmit the measurement results it has stored in the memory,
- receiving the measurement results from the subscriber terminal,
- 15 identifying the base stations with the greatest signal strengths on the basis of the measurement results, and
- determining the home area of the subscriber terminal such that it includes at least one of the identified base stations.
2. A method according to claim 1, **characterized** by preventing the subscriber terminal from setting up communication links via other
- 20 base stations than those which belong to its home area after a home area has been determined for the subscriber terminal.
3. A method according to claim 1 or 2, **characterized** in that said subscriber terminal is a new subscriber terminal, the method also comprising steps of
- 25 adding the identity of the subscriber terminal to a register of new subscribers of at least one subscriber network element, and
- providing said subscriber terminal with free mobility for the duration of the determination of the home area, such that the subscriber terminal operates within an area covered by the subscriber network elements which have
- 30 the identity of said subscriber terminal in their register of new subscribers.
4. A method according to claim 1 or 2, **characterized** in that a home area has been previously determined for said subscriber terminal, and the home area is changed by means of steps of
- adding the identity of the subscriber terminal to the register of new
- 35 subscribers of at least one subscriber network element in the system,

providing said subscriber terminal with free mobility for the duration of the determination of the home area, such that the terminal operates not only in the previously determined home area but also in an area that is covered by the subscriber network elements which have the identity of said subscriber terminal in their register of new subscribers, and

waiting for a location updating message to be forwarded from the subscriber terminal via a subscriber network element which has the identity of said subscriber terminal in its register of new subscribers.

5. A wireless local loop radio system comprising
subscriber terminals (1, 5) comprising measuring means for measuring the strengths of signals they have received from different base stations (BTS1 - BTS10) and for storing the measurement results in a memory, and transmitting means for transmitting location updates to other parts of the system, and

a subscriber network element (DAX1-DAX3, BSC1, BSC2) which communicates with an exchange (LE1, LE2, MSC) and which comprises means for transmitting telecommunication signals between the subscriber terminals and the exchange via the base stations, **characterized** in that the system comprises

detection means (4, HLR) for detecting a location updating message transmitted by a particular subscriber terminal,

transmitting means (4, HLR) for transmitting a command to said particular subscriber terminal to transmit the measurement results stored in the memory of the subscriber terminal after the detection means have detected a location updating message transmitted by said subscriber terminal,

receiving means for receiving the measurement results transmitted by said subscriber terminal,

identification means (4, NMS) for identifying the base stations with the strongest signals on the basis of the measurement results received from the subscriber terminal, and

means (4, NMS), responsive to the identification means, for determining a home area for said subscriber terminal such that said home area includes at least one of the identified base stations.

6. A radio system according to claim 5, **characterized** in that said subscriber network element (DAX1 - DAX3) communicates with a local exchange (LE1, LE2) of the public switched telephone network in

order to transmit telecommunication signals between the subscriber terminals (1) and the local exchange (LE1, LE2) via the base stations (BTS1 - BTS7), and that it is provided with a register (2) of new subscriber terminals, and

5 that the detection means (4) detect location updating messages transmitted by a subscriber terminal (1) the identity of which is stored in the register (2) of new subscriber terminals.

7. A radio system according to claim 5, **characterized** in that said subscriber network element consists of a base station controller (BSC1, BSC2) of the cellular radio system, which communicates with a mobile services switching centre (MSC) in order to transmit telecommunication signals between the subscriber terminals and the mobile services switching centre via the base stations (BTS8 - BTS10).

8. A subscriber network element (DAX1 - DAX3) comprising
15 means for setting up a communication link to an exchange for transmitting telecommunication signals between subscriber terminals and the exchange, and

a register (2) of new subscriber terminals, which stores the identities of the new subscriber terminals, **characterized** in that the subscriber network element comprises

20 detection means (4) for detecting a location updating message containing the subscriber identity stored in the register (2) of new subscriber terminals,

transmitting means (4) which, after said detection of the location updating message, transmit to the subscriber terminal which transmitted the location updating message a command to transmit the measurement results stored in a memory means of the subscriber terminal to the subscriber network element,

25 receiving means (4) for receiving the measurement results transmitted by said subscriber terminal,

30 identification means (4) for identifying the base stations with the strongest signals on the basis of the measurement results received from the subscriber terminal, and

means (4), responsive to the identification means, for determining a home area for said subscriber terminal such that said home area includes at least one of the identified base stations.

35 9. A subscriber terminal (1, 5) of a radio system, comprising

transceiver means for setting up a communication link via the radio path to other parts of the system,

measuring means for measuring the strengths of signals received from different base stations (BTS1 - BTS10) and for storing them in a memory,

5 and

means for transmitting a location updating message to the other parts of the system, **characterized** in that

the transceiver means are arranged to transmit the measurement results stored in the memory means to the other parts of the system in response to a predetermined command received by the subscriber terminal.

10 10. A subscriber terminal according to claim 9, **characterized** in that the transmitting means are arranged to transmit said measurement results in a short message to the other parts of the system.